City Council – Planning Commission Workshop on Sustainability

August 27, 2007

Introduction

The joint City Council/Planning Commission workshop focused on defining sustainability, discussing why it's important, and understanding how the city can become sustainable through planning and development. The purpose of the workshop was to achieve a common understanding of the issues surrounding sustainability, and the level of attention that should be focused on sustainability policy. The actions listed at the end of this report summarize direction provided from city leaders to staff.

Sustainability Policy

The city of Las Vegas has a long history of sustainability policy. Master Plan 2020, based on smart growth principles, envisions a dense, mixed use, walkable community. The Master Plan policies are designed to provide residents with a wide variety of housing choices, transit options and recreation amenities. Additionally, the City Council identified three Strategic Priorities within its Strategic Plan that speak directly to sustainability:

- Create, integrate, and manage orderly and sustainable development and growth of our community,
- Manage cost and revenue resources to achieve efficient operations,
- Support and encourage sustainability, livability, and pride in our neighborhoods.

These strategic priorities are driving sustainability actions throughout the city.

The City Manager has issued a sustainability policy governing operations:

The City of Las Vegas is committed to incorporating consideration for long-term community sustainability as it prepares plans, makes procurements, enacts legislation, builds projects, manages budgets, and conducts daily operations. The goal of these efforts is to properly balance consideration of the environment, economic conditions, and social issues to create a livable, healthy, and stable community for future generations. Through its actions, the City of Las Vegas will support and encourage citizens, businesses, and other local governments to consider sustainability as an element in their own activities.

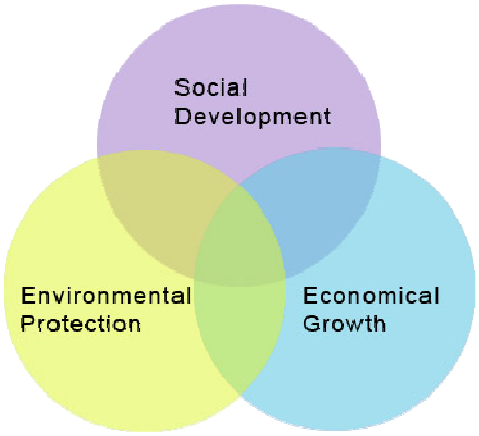
The City sustainability initiative is intended to be a broad-based, organization-wide effort with accountability resting primarily with Department Directors who will have to report periodically to the City Manager on their actions in support of this policy. Guidance for departments is being provided through the Planning and Development Department, an internal steering committee, and an outside citizen committee. The goals are for sustainability to become a routine consideration in all actions taken by the City.

Objectives
Promote environmentally-responsible, sustainable development of the City of Las Vegas.
Reduce overall energy and water consumption
Encourage sustainability education and training

Defining Sustainability

City policy is based on a generally accepted definition that was developed by the Brundtland Commission in 1987:

"Sustainable Development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."



The three-dimension concept was added in 1992. All three dimensions must be in harmony to achieve true sustainability. Sustainability actions that protect the environment are by definition good for business.

City Sustainability Actions

The city has taken a number of actions to become more sustainable. Some of the include:

- **City Employees Lowering Energy By Recycling And Tracking Efficiency**
- **Fleet operations**
- **Traffic signal conversions**
- **Green Building program**
- **Union Park LEED Pilot program**
- **Climate Protection Resolution**
- **Controls at water treatment plant – 50% energy reduction**
- **Waste treatment plant – methane recovery**
- **New city buildings – LEED silver standard**

In each case the city is using resources more efficiently while saving taxpayer dollars. As a result of these and other actions, Sustainlane has ranked the city 27th for sustainability among the largest 50 cities in the country.

Climate Protection and Sustainability

The city's sustainability efforts are focused on efficiency in city operations that save time and money, allowing the city to provide services at a lower cost to taxpayers. However, one important benefit is a measurable reduction in Green-House Gas (GHG) emissions. The primary greenhouse gas is carbon dioxide (CO2), representing about 80% of total GHG emissions. Ninety-four percent of CO2 emissions are from fuel combustion.

Concentrations of CO2 in the earth's atmosphere have increased by 33% since the beginning of the industrial revolution in the 1700s. The majority of this increase has occurred in the last 50 years. The U.S. is responsible for 22% of global CO2 emissions as a result of a strong economy and growing demand for cheap energy.

In simple terms, GHGs trap the suns radiation and warm the planet. The question is: How much will climate change, and will it be a little bad or a lot bad for life on earth as CO2 concentrations continue to increase? Sustainability efforts, by reducing CO2 emissions, can be thought of as providing an insurance policy against the possible outcome that increased concentrations of CO2 in the earth's atmosphere will be real bad.

Carbon Dioxide Source Emissions

One important source of CO2 emissions results from burning fossil fuels (mostly coal) to deliver energy to residential and commercial buildings. This accounts for around 40% of total CO2 emissions. Automobiles for individual use account for about another 20% of the total. Added together, the way we build our city, along with our lifestyle choices, accounts for 60% of total CO2 emissions. The city's role in the land development, zoning and building codes, greatly influences CO2 emissions from automobile and buildings.

Green building standards such as LEED achieve 30% or more in energy savings. One UNLV study showed that in order for the city to meet its commitment to reduce GHG emissions, it must reduce energy consumption in homes by 31% by 2012. The city's voluntary Green Building Program, based on the Southern Nevada Green Building Partnership standards, will reduce energy consumption in new homes by 20% to 30%. As of the writing of this report, no homebuilders have signed up for the voluntary program in the city of Las Vegas. However, many of the standards found in the Green Building program are included in the Kyle Canyon Design Guidelines, projected to have 17,000 dwelling units at buildout.

Heat Island

Community design and building design can also reduce the heat island effect. Daytime temperatures in the summer in urban environments can be 5 – 7 degrees higher than nearby rural areas. More significantly, nighttime temperatures can be as much as 14 degrees warmer. Dark pavement and rooftops absorb the suns radiation causing these

surfaces to heat up as much as 70 degrees above surrounding air temperatures. These surfaces radiate heat at night, creating tremendous demand for energy to cool buildings.

Community design – density, mixed use, transit, open space – along with building design and surface materials on rooftops and paving, can reduce CO2 emissions by providing options to automobile use, mitigating the heat island effect, and reducing demand for energy in buildings.

Climate Change Commitments

In 1997, the Kyoto protocols called on the U.S. to reduce global warming pollution levels by 7% over 1990 levels by 2012. Kyoto was not ratified by the U.S. Seattle Mayor Greg Nickels introduced the Climate Protection Agreement at the 2005 US Conference of Mayors. The Climate Protection Agreement is based on the Kyoto protocols. Around 150 Mayors signed onto the original agreement, including Mayor Oscar B. Goodman. As of this summer, 650 cities have signed the agreement. The city of Las Vegas adopted a climate protection resolution in October, 2006.

The Mayors recognized that cities have tremendous potential for implementing climate change policy. There are two reasons for this: 1) demographic shifts in population to cities; and 2) Police Powers - zoning codes, building codes, municipal utilities, franchise agreements and infrastructure development.

Since adopting the climate protection resolution, the city of Las Vegas has joined the International Council for Local Environmental Initiatives (ICLEI). ICLEI provides a GHG model and expertise to member cities. They have become the standard for cities that have signed on to the U.S. Conference of Mayors Climate Protection Agreement. Preliminary results for the City indicate that there are approximately 155,000 tons of CO2 emissions from city operations annually. This is equivalent to CO2 emissions from burning 750 rail cars of coal, 350,000 barrels of oil or 17 million gallons of gasoline. Final model results will be available in October, 2007, and will allow a comparison with similar cities, as well as a projection of future emissions and recommendations for reduction targets.

Framework for City Sustainability

The framework being developed has three primary components:

1. City Business – regulatory authority over land development (land use, zoning codes, building codes, development agreements, land development standards), franchise agreements with utilities, and infrastructure development.
2. City Operations – In addition to the many efficiency actions the city has taken to become more sustainable, a committee has been formed to develop and implement sustainability action plans within City Departments. The committee is named CELEBRATE (City Employees Lowering Energy By Recycling And Tracking Efficiency). It meets quarterly and is focused on increasing efficiency

across city operations by reducing energy use, increasing recycling, reducing paper use, increasing efficiency of fleet operations, and encouraging alternate modes of commuting.

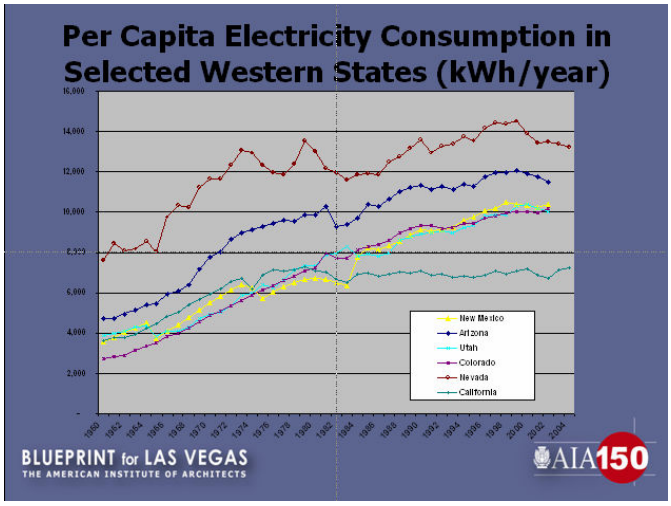
3. Community Outreach – a committee of interested persons representing various interest groups is being formed to educate, raise awareness and spread sustainability throughout the community.

AIA Blueprint for Las Vegas

A 24 hour town hall meeting focused on several topics related to sustainability. At the request of Mayor Oscar B. Goodman, an encore session was held so more professionals could participate. Some of the sustainable topics examined included Resources, Planning and Transportation and the following strategies were formed:

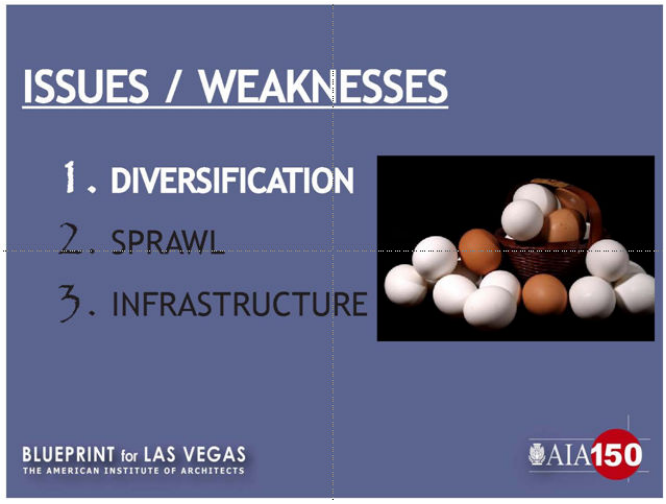
Resources

- 25% Reduction In Energy AND Water Use/Consumption By 2015
- 50% Reduction In Energy AND Water Use/Consumption By 2020
- 75% Reduction In Energy AND Water Use/Consumption By 2025
- Zero (Net Annual) Energy AND Water By 2030 (Projected Pop. Of Clark County Will Be Approx. 3 Million)



Planning

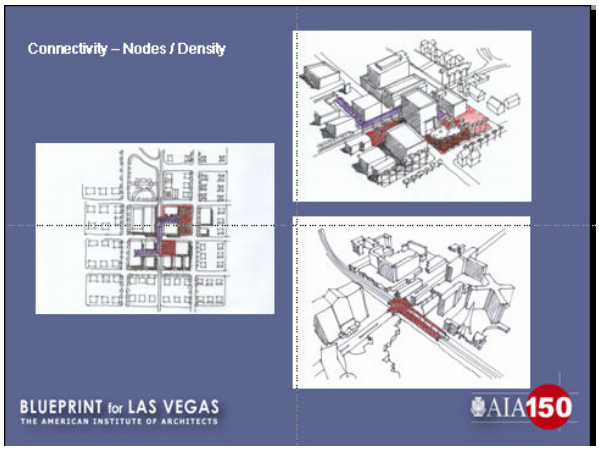
- Develop a regional "overlay" construct of sustainable policies that are upheld and invest more authority in the SNRPC
- Create "pre-zoned" districts fostering infill development and mixed, "cluster" development for BLM land disposals to avoid reverse zoning.
- Adopt "form-based" zoning standards
- Develop modified roadway standards based on holistic – multi-functional objectives



which softens the engineering footprint

Transportation

- Link Transportation to Land use
- Reduction of Private Vehicles
- Alternate Modes of Transportation
- Connectivity – Nodes / Density
- Educate the Public
- Funding of Transportation



Sustainable Community Design

Three urban design elements can directly contribute to the community's sustainability: density, streetscape and parking.

As growth draws more population and housing and land becomes increasingly scarce, community design policies and practices can lessen the impacts on the environment, infrastructure, resources and capital while protecting natural features and open space.

Higher density, mixed-use projects that are well-designed and appropriate to their surroundings actually sustain or increase the value of surrounding properties. Proximity to transit increases desirability and value and reduces the environmental impacts of personal cars.

In reality, high-quality mixed-use and multifamily development:

- Increased walkability and vehicle miles decreased as uses are located closer together.
- Can increase the value of adjacent properties.
- Increase pedestrian activity and add more "eyes on the street," thereby reducing crime.
- Generate less traffic where trips may be combined and walking is possible.

Density is appropriate:

- Where impacts are minimized
- Where there is adequate transportation
- Where there are supportive uses & amenities

Attractive, well-shaded streetscapes and narrower streets encourage walking, reduce the "heat island" effect, reduce street construction and maintenance costs and temper traffic speeds. Aesthetic appeal of

streetscapes adds value to properties and contributes to public safety by adding "eyes on the street."

Parking ratios should be determined based on actual usage to avoid large, unused parking lots that contribute to the "heat island" effect. Shaded parking lots by trees and/or shade structures are beneficial. Shared parking, particularly for mixed-use, should be considered and accommodated.

Sustainable Transportation

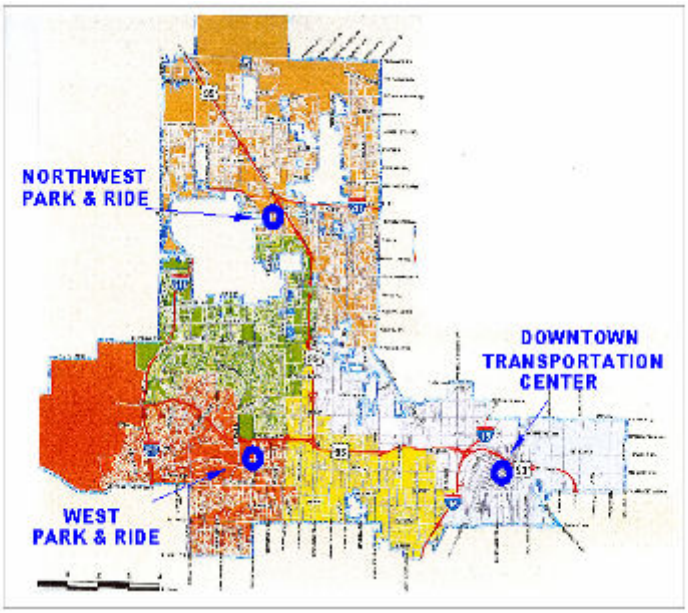
Addressing transportation capacity constraints and improving mobility can be achieved by employing sustainable transportation alternatives by:

- Using transportation modes that use energy more efficient such mass transit, cycling, and walking.
- Improving the efficient use of our car by car pooling or planning our trips better.
- Laying out our cities to bring people and their uses closer together.
- Developing policies that allow and promote these options.

The Southern Nevada Regional Transportation Commission (RTC) and the city of Las Vegas just launched the construction of the Bus Rapid Transit (BRT) system on the Downtown Connector route. Named "Ace", the system will move passengers from Sahara north into downtown Las Vegas through the Arts District, the south office district to the Union Park district. The system will have dedicated lanes and the elevated stops enable boarding and off-loading at platform level similarly to a train. Stations will be designed in context with their surroundings.

The RTC is also constructing a BRT system route from downtown Las Vegas along Boulder Highway to Henderson.

The RTC will be implementing an express park and ride system to bring commuters from the suburbs to the employment centers in a safe, efficient, and convenient manner. They are planned to be aligned with the BRT systems and transportation centers to enable easy and timely connections.



Lastly, the city's transportation trails and recreation trails system accommodates those preferring non-motorized modes of transportation.

Transit Oriented Development (TOD)

TOD is moderate to higher density development, often mixed-use, that is within walking distance of a major transit stop.

TOD can be new construction or redevelopment of one or more buildings whose design and orientation facilitate transit use. Generally, TOD has a mix of residential,

employment and shopping opportunities that is that is designed for pedestrians without excluding the automobile.

Proximity to transit alone, however, qualifies as transit oriented development. It also:

- Increases "location efficiency" so people can conveniently walk, bike and take transit.
- Can boost transit ridership and minimize the impacts of traffic.
- Provides a rich mix of housing, jobs, shopping and recreation.

Benefits derived by TOD include:

- Value for the public and private sectors, and for both new and existing residents.
- Creates a sense of community by providing linkages and connections from place to place, neighborhood to neighborhood.
- Reduced greenhouse emissions through the reduction of private vehicle use for commuting, daily errands and entertainment.
- Provides an additional lifestyle choice for city residents

Lastly, transit oriented development is a *choice* not an outcome.

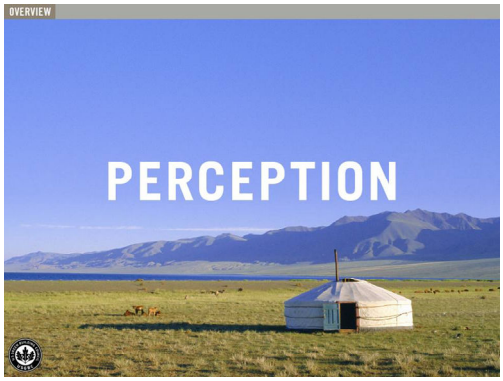
- Residents can choose driving or taking public transit to work, because both are convenient.
- People working in the offices and commercial areas can choose to live in the TOD, so they can walk to work.
- TOD residents can choose to shop and dine somewhere nearby.

U.S. Green Building Council (USGBC)

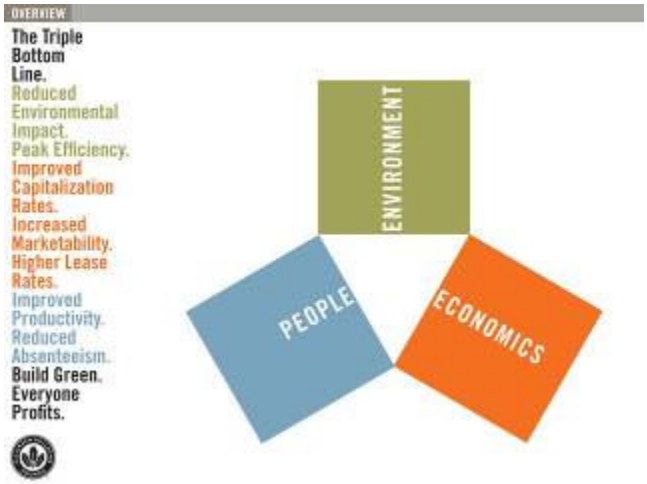
USGBC is a coalition of the country's foremost leaders from across the building industry. USGBC promote buildings that are

- Environmentally responsible
- Economically profitable
- Healthy places to live and work

"Green building" is design and construction practices that meet specified standards, resolving much of the negative impact of buildings on their occupants and on the environment.



The USGBC created and administers the Leadership in Energy and Environmental Design (LEED) certification and accreditation programs. LEED is a leading-edge system for certifying the design, construction and operations of the greenest buildings in the world.

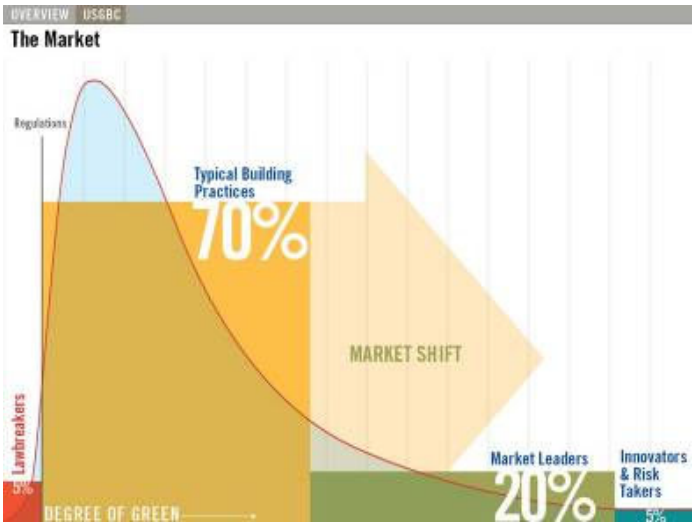


There are four LEED levels: Platinum, Gold, Silver and LEED certified.

The LEED scoring process assesses:

1. Site Planning
2. Water Management
3. Energy Management
4. Material Use
5. Indoor Environmental Air Quality
6. Innovation & Design Process

There are two LEED certified projects in southern Nevada and over 50 registered projects statewide including the Molasky Corporate Center, Las Vegas Springs Preserve, and the LIED Animal Shelter located within the city.



Green Building – Union Park

Union Park, high-density, mixed-use development located on 61 acres just west of Main St., has been accepted into the LEED Neighborhood Development (ND) pilot program.

The LEED ND program is based on:

- Smart Location
- Linkage to the Community at large
- Green Construction and Technology
- Neighborhood Pattern and Design
- Water and Energy Conservation

The key goals of LEED ND are:

- To create a greater sense of community with transportation to reduce sprawl and energy consumption
- LEED certification will promote a healthier, quality and comfort of life

The feedback generated from the pilot program, which will run from 2007-2009, will be the basis for setting the criteria and ratings of NEED ND projects. There are 238 projects in 39 cities located in seven countries enrolled selected into the pilot program.

While in the pilot program and managing the development of Union Park, the following steps will be taken to advance towards LEED

certification:

- Document our points with LEED AP consultant
- Participate in Focus Group
- Continue to look for project opportunities to try things in a new way:
    - New street/utility specs to include recycled materials, rubberized asphalt, etc.
    - New ideas from other pilot programs
    - Set new utility standards for new construction including water use, etc.
- Promote LEED status for overall project
- Work with all 3rd party developers to facilitate their project certifications.

Synchronizing Community, Environment and Business

Whole system thinking integrates community, economic, and environmental factors. Long term implications of policies are considered, along with the interrelationships among factors involved in the decision making process. Whole system thinking is about results, not ideology.

One outcome of whole system thinking is multiple benefits from a single investment. An example is redesigning a street to be narrow and include planting of trees to separate the street from the sidewalk. One potential cost often cited is moving fewer cars through the corridor. Benefits include slower speeds and increased safety for driver and pedestrian, lower temperatures, reduced energy in adjacent buildings, increased property values, more comfortable walking environment, attracts retail business, produces oxygen, reduces soil erosion, absorbs greenhouse gases, absorbs stormwater and increases occupancy rates.

Risk Management for a community through whole system thinking and sustainability reduces exposure to rising energy costs, federal carbon regulation, green reputation (skilled, educated workers are attracted to healthy, sustainable cities and organizations).

Growth – land use policy addressing growth must distinguish between development and expansion. Expansion grows the physical limits of a city making it bigger, usually through costly, low density suburban subdivisions at the edge of the built city. Development invests in the city's assets to make it better. Las Vegas is at a critical juncture in its growth: either continue expansion policy by spreading across the desert – the next growth areas are 20 miles from downtown, or institute development policies that encourage growth by investing in existing community assets. Some continued expansion can be beneficial if planned appropriate – cluster development, infill, mixed land-uses, traditional design, multiple transportation options. Opportunities also exist to develop the city without expanding. The social, environmental, fiscal and economic costs of expansion and development must be taken into consideration.

Land use subsidies drive suburban development further into the desert countryside. Federal subsidies on gasoline, highway development and home mortgage tax exemption encourage single family homeownership great distances from jobs and services. Local

subsidies on streets and parking encourage automobile use, existing taxpayers subsidize public infrastructure, facilities and services for expansion. Many costs of sprawl style development have been well documented, including human physical and mental health, social behavior, environmental costs, increased energy demand and greenhouse gas emissions.

Whole system planning includes considering the relationship among sites along with green building design and sustainable site design.

City Council and Planning Commission Action Items

A number of comments and suggestions were made during presentations and during the facilitated discussion that followed the presentations. Based on participant input, a number of actions have been developed. The majority of comments from the workshop fall under one or more of the actions listed below.

1. Action: Adopt a Sustainability Plan.
    a. CC/PC Direction: Overlay sustainability concepts on City Council's Strategic Plan, Vision and Mission to develop a Sustainability Plan for the City.
    b. Discussion: A number of policies, programs and projects are in various stages of development. These form the backbone of a comprehensive sustainability program. However, there is no formal plan through which the City Council directs these efforts. There is a need to develop a Sustainability Plan with its direction firmly rooted in established City Council policy as adopted through the Strategic Plan.
    c. Staff Commitment: Deliver a Sustainability Plan to the Planning Commission and City Council for consideration in January, 2008.
2. Action: Evaluate Fiscal and Environmental Costs of Expansion.
    a. CC/PC Direction: Determine the cost of building new subdivisions at the periphery versus investing in existing neighborhoods and the urban core.
    b. Discussion: Building new subdivisions at the edge of the city creates demand for infrastructure and city services. The revenue generated from new development does not cover the cost of providing city services, or the cost of constructing and maintaining new public facilities. The true cost of low density suburban expansion is buried deep within federal, state and local subsidies. With limited resources, the question that needs to be answered is whether the city should continue to invest in expansion that loses money, or invest in development of existing neighborhoods and the urban core.
    c. Staff Commitment: Evaluate the fiscal and environmental costs and benefits of expansion, December 2007.
3. Action: Perform a code audit to identify barriers to sustainability and draft code revisions and design standards in support of compact, mixed use, transit oriented development.
    a. CC/PC Direction: Develop solutions to fragmented, disconnected development patterns.
    b. Discussion: Some city codes and standards discourage sustainable development, and may encourage patterns that are not sustainable. The current mixed-use development standards do not adequately locate high-density development where appropriate nor minimize the impacts of such development. In addition, the city has not adopted a mixed-use parking standard outside of the Downtown Centennial Plan area. While the RTC is planning transit lines along several major arterials in the city, no transit-oriented development regulations are in place to encourage appropriate

development in these areas. Changes should be made in order to encourage more sustainable development patterns within the city of Las Vegas

   c. Staff Commitment: Perform a code audit to identify requirements that are contrary to sustainability. Prepare revisions to the mixed-use development regulations and a transit-oriented development ordinance for review by Planning Commission and City Council by December 2007.

4. Action: Evaluate mandates and incentives for green building standards.
   a. CC/PC Direction: Determine whether the City should or is allowed to establish LEED or other green building standards.
   b. Discussion: The city of Las Vegas' Green Building Program requires that new city buildings achieve LEED silver equivalent level of design and performance. The Program also recognizes builders that meet the Southern Nevada Green Building Partnership green building standards for residential development. Commercial and residential buildings built to these standards achieve, among other benefits, 30% or more energy and water savings. There currently are no mandates, and only limited incentives for achieving a green building standard.
   c. Staff Commitment: Work with the development community to make a recommendation for incentives and mandates for different levels of green building standards, February, 2008.
5. Action: Educate homebuyers on benefits of green building.
   a. CC/PC Direction: Develop an outreach strategy to help drive the market by informing the public of the benefits of green building.
   b. Discussion: The public is generally not well educated regarding climate change, benefits of sustainability, and advantages of working and living in green built buildings. The City can play an important role by reaching out to the community and providing credible, understandable information, similar to the SNWA water conservation campaign. Survey work needs to be completed to gauge public interest, knowledge and attitudes towards green building and sustainability. One strategy is to evaluate air quality, energy efficiency, health and demographics to identify areas in the city with the greatest need for sustainability revitalization, and use the resources of the Green Council to establish grass roots sustainability one neighborhood at a time.
   c. Staff Commitment: Establish the Green Council, October, 2007.
6. Action: Adopt a heat island mitigation plan.
   a. CC/PC Direction: Develop a heat island mitigation strategy.
   b. Discussion: Las Vegas daytime temperatures in the urban area can be five to seven degrees warmer than surrounding rural areas. Nighttime temperatures can be up to fourteen degrees warmer. This heat island creates tremendous demand for energy to cool buildings during the day and at night. Pavement, rooftops, landscaping, parking requirements, street widths, can all contribute to the heat island effect.
   c. Staff Commitment: Present a heat island mitigation plan for Council consideration, January, 2008.

7. Action: Establish a City of Las Vegas tree planting program.
    a. CC/PC Direction: Plant more trees in city rights-of-way and city facilities, and provide assistance to businesses and homeowners to plant more trees on private property.
    b. Discussion: Trees beautify neighborhoods, soften the built environment, provide shade, decrease urban average temperatures, absorb carbon dioxide emissions, and make outdoor activities such as picnics, walking, exercising more attractive. Trees also increase property values.
    c. Staff Commitment: Present a tree planting program for consideration. October, 2007.
8. Action: Prepare City of Las Vegas Best Practices Report.
    a. CC/PC Direction: City has a lot of "wins" that should be documented and promoted.
    b. Discussion: Staff has developed a "Green Sheet" which lists all sustainability initiatives underway throughout the organization. In addition, a webpage dedicated to sustainability has been created and is now available on the city's website. However, the Green Sheet does not provide any background information on these initiatives. In order to properly document the city's efforts, a more comprehensive documentation of city successes is required, including initial cost of program, annual cost savings, reduction in CO2 emissions and a description of the project or program.
    c. Staff Commitment: Prepare a best practices report with project description, costs, cost savings, and a mechanism for tracking cost savings over time, October, 2007.